The Australian *Alyogyne cravenii* Transferred to *Hibiscus* (Malvaceae)

B. E. Pfeil[1,2,3] *and L. A. Craven*[1]

[1]Australian National Herbarium, Centre for Plant Biodiversity Research, CSIRO Plant Industry, GPO Box 1600, Canberra, ACT 2601, Australia. bep27@cornell.edu; Lyn.Craven@csiro.au

[2]Australian National University, School of Botany and Zoology, Canberra, ACT 0200, Australia

[3]Present address: Department of Plant Biology, 228 Plant Science Building, Cornell University, Ithaca, New York 14853, U.S.A.

ABSTRACT. *Alyogyne cravenii* Fryxell (Malvaceae) is transferred to *Hibiscus cravenii* (Fryxell) B. E. Pfeil & Craven on account of character information from the chloroplast, nucleus, and morphology. These data do not place *A. cravenii* with its congeners *A. hakeifolia*, *A. huegelii*, and *A. pinoniana*, instead placing it with *H.* sects. *Bombicella* and *Hibiscus*.

Key words: *Alyogyne*, Australia, *Hibiscus*, Hibisceae, Malvaceae.

In 1987, Fryxell published a new species in *Alyogyne* (*A. cravenii*) from the Keep River area in the Northern Territory of Australia. This species was based on two collections, the holotype *Fryxell, Craven & Stewart 4870* and *Craven 8462* (details in Fryxell, 1987). Since then two additional collections of *A. cravenii* from the same area have been made, i.e., *Egan 5027* and *Cowie 7726*.

Our investigations into the phylogenetic history of the tribe Hibisceae (Malvaceae) prompted us to examine DNA sequence variation among several *Alyogyne* and *Hibiscus* species (Pfeil et al., 2002). Unexpectedly, chloroplast DNA sequences from two regions (the *ndh*F gene and the *rpl*16 intron) generated from living material of the type collection of *A. cravenii* did not group this species with three of its congeners, *A. hakeifolia*, *A. huegelii*, and *A. pinoniana* (Pfeil et al., 2002). Instead, *A. cravenii* was placed in a clade with several species of *Hibiscus* sect. *Bombicella* and *H.* sect. *Hibiscus*. This result was well supported by bootstrap resampling (Pfeil et al., 2002) and appears to be robust in differing analysis methods (i.e., parsimony and maximum likelihood; Pfeil et al., in prep.).

Further morphological examination revealed four characters shared by the three *Alyogyne* species mentioned above, but not by *A. cravenii*, while *A. cravenii* shares a number of features with all other *Hibiscus* species studied so far (Pfeil et al., 2002). These characters are summarized in Table 1. One feature that helps distinguish *Alyogyne* from *Hibiscus* is the unitary style in the former, which was reported from *A. cravenii* ("style single," Fryxell, 1987: 279). However, this observation appears to be erroneous, as our examination of the holotype material cited in the first publication, and other collections (*Egan 5027*, *Cowie 7726*, which are in every respect similar to the type collection), has revealed distinct styles in all cases.

Further DNA sequence examination of a low-copy nuclear gene, RNA polymerase II 2nd largest subunit (*rpb*2), also places *A. cravenii* sequences within a clade containing sequences from *Hibiscus* sects. *Bombicella* and *Hibiscus*, and not among its congeners (Pfeil et al., 2004).

Table 1. Characters that distinguish *Alyogyne* and *Hibiscus*.

Character	State in *Alyogyne*	State in *Hibiscus* and *A. cravenii*
Staminal column terminal sterile tissue or teeth	absent	present
Styles	connate throughout	free distally
Stigmas	lobed/flat or club-shaped	capitate
Endosperm	copious	reduced

Conclusion

As three independent sources of characters all agree in placing *Alyogyne cravenii* within *Hibiscus*, the current generic placement cannot be maintained. Therefore, we transfer this species to *Hibiscus*, as *H. cravenii*. As the sectional boundaries in *Hibiscus* are currently under revision, this species will not be placed in a section, although on the basis of foliar and floral morphology it appears closely related to several Australian species considered part of *H.* sect. *Bombicella*, i.e., *H. setulosus*, *H. leptocladus*, and *H. geranioides*.

Hibiscus cravenii (Fryxell) B. E. Pfeil & Craven, comb. nov. Basionym: *Alyogyne cravenii* Fryxell, Syst. Bot. 12: 277. 1987. TYPE: Australia. Northern Territory: Keep River, in dissected sandstone hills W of river, ca. 30 km E of Kununurra, 15°48′S, 129°04′E, 20 June 1985, *P. A. Fryxell, L. A. Craven & J. McD. Stewart 4870* (holotype, CANB; isotypes, DNA, AD, BH, K, L, MARY, MEL, NY, PERTH, TEX, US).

Selected specimens examined. AUSTRALIA. **Northern Territory:** Keep River NP, Jarrnam area, 15°45′36″S, 129°05′03″E, 8 June 1995, *Egan 5027* (CANB [seen]; [DNA not seen]); Keep River NP, valley W of Garrandalng, 15°51′43″S, 129°02′29″E, 31 May 1998, *Cowie 7726* (CANB [seen]; DNA, MEL, PERTH [not seen]).

Literature Cited

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